Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (currently amended) A system for detecting neutron radiation comprising:

a liquid cocktail mixture comprised of a neutron absorber ~~and~~ dissolved in water with a liquid scintillator, said cocktail mixture housed in a tube having a mirror at one end of the tube and a windowed portal at the other end of the tube such that neutrons that penetrate the tube react with the neutron absorber producing ionization that excites the scintillator and produces photons;

a photo-multiplier tube coupled with the windowed portal for receiving the photons and converting the photons to electrical signals; and

a processing device for receiving and analyzing the electrical signals so as to provide a measurement pertaining to the presence and relative strength of neutron radiation.

2. (original) The system of claim 1 wherein the liquid cocktail mixture further comprises a wavelength shifter for converting light emitted by the scintillator to another wavelength.

3. (currently amended) The system of claim 2 wherein the tube is a ~~Teflon®~~ polytetrafluoroethylene (PTFE) tube acting as a liquid light guide, the liquid light guide capable of monitoring large ~~apetured~~ apertured areas.

4. (currently amended) The system of claim 2 wherein the tube is a ~~Teflon®~~ polytetrafluoroethylene (PTFE) tube modified for portable use as a survey instrument, the tube capable of being easily transported to areas of interest.

5. (original) The system of claim 1 wherein the neutron absorber component of the cocktail mixture is comprised of $LiBF_4$ (lithium tetrafluoroborate).

6. (original) The system of claim 1 wherein the neutron absorber component of the cocktail mixture is comprised of LiCl (lithium chloride).

7. (original) The system of claim 1 wherein the neutron absorber component of the cocktail mixture is comprised of $NaBF_4$ (sodium tetrafluoroborate).

8. (original) The system of claim 1 wherein the scintillator component of the cocktail mixture is comprised of a tris complex of 2,6-pyridine dicarboxylic acid (dipicolinic acid) $Li_3[Eu(DPA)_3]$.

9. (original) The system of claim 2 wherein the wavelength shifter component of the cocktail mixture is comprised of a rare earth chelate.

10. (original) The system of claim 9 wherein the rare earth chelate is europium.

11. (currently amended) A liquid cocktail mixture for detecting the presence of neutrons comprising:

a neutron absorber component dissolved in water; and

a liquid scintillator component.

12. (original) The liquid cocktail mixture of claim 11 further comprising a wavelength shifter for converting light produced by the scintillator component to another wavelength.

13. (original) The liquid cocktail mixture of claim 11 wherein the neutron absorber component of the cocktail mixture is comprised of $LiBF_4$ (lithium tetrafluoroborate).

14. (original) The liquid cocktail mixture of claim 11 wherein the neutron absorber component of the cocktail mixture is comprised of LiCl (lithium chloride).

15. (original) The liquid cocktail mixture of claim 11 wherein the neutron absorber component of the cocktail mixture is comprised of $NaBF_4$ (sodium tetrafluoroborate).

16. (original) The liquid cocktail mixture of claim 11 wherein the scintillator component of the cocktail mixture is comprised of a tris complex of 2,6-pyridine dicarboxylic acid (dipicolinic acid) $Li_3[Eu(DPA)_3]$.

17. (original) The liquid cocktail mixture of claim 12 wherein the wavelength shifter component of the cocktail mixture is comprised of a rare earth chelate.

18. (original) The liquid cocktail mixture of claim 18 wherein the rare earth chelate is europium.